



# MICHIGAN STATE POLICE BEST PRACTICE GUIDELINES FOR THE CAPTURE OF MUGSHOTS

Revised 4-16-2003



These guidelines are not designed to render current and legacy mugshot collections unacceptable. Rather, as a means of establishing or improving interoperability between mugshot systems. This recommendation reflects a minimum set of common denominators. The provisions of this recommendation are keyed to the quality aspects associated with the unaltered captured mugshot image. For new mugshot images being captured, the specifications contained in this recommendation are equally applicable to real-time electronic capture of mugshots as well as the electronic conversion of photographic images. For conversion of legacy files of photographs, most of the provisions of this recommendation are also still applicable.

## MUGSHOT CAPTURE GUIDELINES

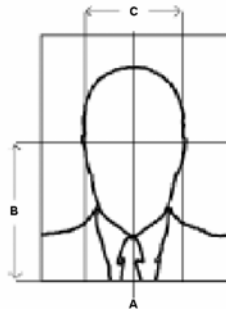
**POSE** - The full-face or frontal pose is the most commonly used pose in photo lineups and shall always be captured. This pose is in addition to profiles captured to acquire perspective and other information. For consistency, if only one profile is taken, it should be a left profile (subject facing his/her right). For subjects who normally wear eyeglasses, a frontal mugshot image should be captured of the subject without glasses. This is required due to the glare from external illumination. An additional image can optionally be captured of the subject wearing eyeglasses.

**DEPTH OF FIELD** - The subject's captured facial image shall always be in focus from the nose to the ears. Although this may result in the background behind the subject being out of focus, it is not a problem. For optimum quality of the captured mugshot, the f-stop of the lens should be set at two f-stops below the maximum aperture opening when possible.

**CENTERING** - The facial image being captured (full-face pose) shall be positioned to satisfy all of the following:

**A)** The approximate horizontal mid-points of the mouth and of the bridge of the nose shall lie on an imaginary vertical straight line positioned at the horizontal center of the image.

**B)** An imaginary horizontal line through the center of the subject's eyes shall be located at approximately the 55% point of the vertical distance up from the bottom edge of the captured image.

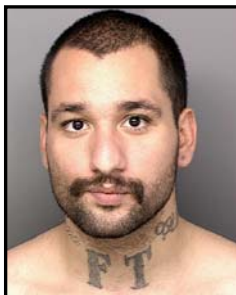


**C)** The width of the subject's head shall occupy approximately 50% of the width of the image. This width shall be the horizontal distance between the mid-points of two imaginary vertical lines. Each imaginary line shall be drawn between the upper and lower lobes of each ear and shall be positioned where the external ear connects to the head.

**LIGHTING \*** - Subject illumination shall be accomplished using a minimum of three (3) point balanced illumination. Appropriate diffusion techniques shall also be employed and lights positioned to minimize shadows, and to eliminate hot spots on the image. These hot spots usually appear on reflective areas such as cheeks and foreheads. Proper lighting shall contribute to the uniformity of illumination of the background described in the exposure requirement.

**BACKGROUND \*** - It's important for law enforcement agencies sharing mugshot images to use a consistent background, especially for the purposes of conducting photo lineups. As with a traditional lineup, all subjects should be presented in front of a common background to prevent any one of the lineup subjects from standing out for any reason other than the subject's personal features. It is not uncommon for defense attorneys to raise consistency issues about photo lineups in a court of law. The subject whose image is being captured shall be positioned in front of a background which is 18% gray with a plain smooth flat surface. A Kodak or other neutral gray card or densitometer shall be used to verify this 18% gray reflectance requirement. Contact the Michigan State Police if your agency is interested in purchasing a compliant background off of the state contract.

## EXAMPLES



## **TECHNICAL PHOTOGRAPH GUIDELINES**

**EXPOSURE \*** - The exposure shall be keyed to the background. Several areas of the recorded 18% gray background shall be used to verify the proper exposure. The averages of the 8-bit Red, Green, and Blue (RGB) components within each area shall be calculated. Each of the RGB means shall fall between 105 and 125 with a standard deviation of plus or minus 10. Furthermore, for every area examined, the maximum difference between the means of any two of the RGB components shall not exceed 10.

**ASPECT RATIO \*** - The width:height aspect ratio of the captured image shall be 1:1.25.

**MINIMUM NUMBER OF PIXELS \*** - The minimum number of pixels in an electronic digital image shall be 480 pixels in the horizontal direction by 600 pixels in the vertical direction. It should be noted that the image quality of the captured images will be improved as the number of pixels in both directions are increased. However, as images are captured with an increased number of pixels, the 1:1.25 (width:height) aspect ratio will be maintained. Two considerations must be noted regarding this aspect of the recommendation. First, the normal orientation of many available cameras is the landscape format which specifies a greater number of pixels in the horizontal than in the vertical direction. Unless these cameras capture at least 600 pixels in the vertical direction, it may be necessary to rotate the camera 90 degrees. Second, the 480x600 capture format exceeds the VGA display format of 640x480. Therefore, at a minimum, an SVGA specification of 800x600 pixels will be required to display the image. The image will occupy less than the total number of available horizontal pixels.

**COLORSPACE \*** - Captured electronic color images are required. Digital images shall be represented as 24-bit RGB pixels. For every pixel, eight (8) bits will be used to represent each of the Red, Green, and Blue components. The RGB colorspace is the basis for other colorspace including the Y, Cb, Cr and YUV. Additional color management techniques are available from the International Color Consortium. Information regarding these techniques can be downloaded from the following URL: <http://www.color.org>

**PIXEL ASPECT RATIO \*** - Digital cameras and scanners used to capture images shall use square pixels with a pixel aspect ratio of 1:1.

**COMPRESSION ALGORITHM \*** - The algorithm used to compress images shall conform to the JPEG Sequential Baseline mode of operation as described in the specification approved by the ANSI X3L3 Standards committee. The target size for a JPEG compressed color image file shall be 25,000 to 45,000 bytes.

**FILE FORMAT \*** - The JPEG File Interchange Format (JFIF) shall contain the JPEG compressed image data. The JFIF file shall then be part of the transaction file for interchange which conforms to the requirements as contained in ANSI/NIST-CSL 1-1993 and ANSI/NIST-ITL 1a-1997.

\* Applies not only to mugshot images, but to scars, marks, and tattoo (SMT) images as well.

**Agencies interested in purchasing mugshot capture workstations, capture hardware/software, or backgrounds off of the state contract, should contact the Michigan State Police, Criminal Justice Information Center at (517) 322-5511.**

**Information in this document is derived from the "Best Practice Recommendations for the Capture of Mugshots" NCITS B10.8/98-008 Version 2.0 September 23, 1997.**